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DISAPPEARING SHEEP: THE UNEXPECTED CONSEQUENCES OF THE EMERGENCE OF THE CATERPILLAR FUNGUS ECONOMY IN GOLOK, QINGHAI, CHINA

for Nick Park

This paper analyzes the “disappearing sheep” phenomenon that has occurred due to the selling off of entire flocks of sheep by nomadic households, as observed in Domkhok Township in Golok Tibetan Autonomous Prefecture of Qinghai Province, and relates it to the rise of the caterpillar fungus economy. Gathering and sale of the fungus, as well as leasing the land use rights to gatherers, bring for local pastoralists an income unmatched in size by anything else available to the rural population of Golok. The paper shows how the availability of this new source of income changes the local nomadic pastoralists’ ways of managing livestock production which, prior to the boom, was the basis of their households’ budgets. The paper contextualizes different decisions made regarding yak and sheep production in terms of the pastoralists’ own cultural and economic rationales. Although in the last decade state investments have changed the economy of the area, the changes discussed in this paper have been possible due to the emergence of the new caterpillar fungus-related economy rather than because of this state investment. This paper furnishes comparative data for studying economic performance and social change throughout rural Tibet in the first decade of the Open Up the West campaign.

INTRODUCTION

The Domkhok (*sDom khog*)¹ Township is remembered by its senior generation residents as a place teeming with wildlife, and literally covered with deer antlers and wild yak bones. The migration stories of the Metsang (*dMe tshang*) people say that before they finally settled in Domkhok, they used the land in the Dom (*sDom*) river valley as seasonal hunting grounds. The tribe’s ancestors are praised in the elderly people’s stories for their courage in meeting the real owners of the land: the wild yaks or *drong* (*’brong*). Some of the huge yak skulls exposed on the house roofs are said to date back to that time. The name Dom too, is said to bear witness to those days when the *dom* or Tibetan bear walked freely through these empty lands undisturbed by its human neighbors.

The hunting paradise the Metsang people found belongs to the memories of how it was when the first Metsang hunters set foot on this land. Hunting

and weapons are no longer discussed today, but today Domkhok’s fame stems from something utterly different. When Deng Xiaoping’s 1980s reforms opened the door to private trade and allowed a rise in the market price of the caterpillar fungus or *Ophiocordyceps sinensis*², Domkhok turned out to be a valuable source of this sought-after medicinal product. The local nomadic pastoralists were given a chance to earn other than livestock-related income and build their prosperity under the new Household Responsibility system. Domkhok Township started attracting scores of people from outside Golok, who, under changing policy regimes, paid high digging

2. *Ophiocordyceps sinensis* is a fungus endemic to the Tibetan plateau, and noted from the Tibetan areas of China and from along-the-Himalaya-belt in Nepal, Bhutan and India. It is an entomophagous fungus feeding on larvae of certain populations or species of moths of Thitarodes. Infecting the larvae the fungus “consumes” the tissues of the host organism and completes its living cycle by producing spores which will infect new hosts. The *Ophiocordyceps*’ hybrid look gave it its Tibetan (*yartsa gunbu*; *dbyar rtsa dgun ’bu*) and Chinese name (*dong chong xia cao*) or “summer grass winter worm”, as well as its English appellation: caterpillar fungus. It is used in medicine production, as a diet supplement and in a rich “gift” culture; cf. Winkler 2008a, b and more; Devkota 2008 and 2006, and Sharma 2004.

1. Tibetan words are transcribed according to their local pronunciation. The Wylie transliteration in brackets indicates the Tibetan spelling.

fees and searched the grassland for caterpillar fungus, thus directly and indirectly contributing to the improvement in the township's economic position.

Two decades later Domkhok continues to be seen as a paradise for private diggers, who risk hardships and law-breaking to enter it in the caterpillar fungus gathering season. At the same time the township has undergone visible changes, and the income from the fungus gathering has been one of the engines of many developments in the area. Whether done with public or private money, the results made Domkhok an example of how development in pastoral regions in Qinghai should look: the prefecture's official guests are given tours through the township and shown the level of progress and improved life conditions of the pastoralists. More and more houses are being built, the roads get better and better, and the mobile phone coverage reaches deeper into the highlands. Meanwhile, from Domkhok's natural landscape other animals are disappearing. After the wild yaks, alive in the stories about the past, the time has come for sheep.

THE AIM AND THE DATA

This paper focuses on the decline in the number of sheep owned by nomadic Tibetan pastoralists in China: decline not in the sense of increased *sales* but *sales-off*, when nomadic households sell off entire flocks of sheep at one time. This phenomenon was casually reported on earlier, but no study up to this date attempted at a systematic explanation of the motives that bring the pastoralists to this sheep selling off decision. This paper analyzes the dynamics and scale of the "disappearing sheep" phenomenon as observed in Domkhok Township, and reveals the rationale for the local actors' decisions. It analyzes the pastoralist households' budgets and shows what contribution sheep production can have for their economy.

I argue that declining sheep numbers should be analyzed together with the emergence of the new, non-pastoral sources of income. In the case of Domkhok Township, this is cash income from gathering *Ophiocordyceps sinensis*, as well as the sale and leasing of land to others for that purpose. Among the reasons contributing to the decrease are changes in demographics in the area (smaller households do not have enough of a work force for sheep breeding), insufficient grass resources and state policies aimed at reducing livestock numbers to improve the quality of the grassland environment. The focus however is on the economic factor. Without it, I argue, the decision to sell off the sheep would be more difficult to make.

Domkhok Township is a good case for studying the consequences of the growth of the trade in non-pastoral products for the nomads' other basic economic occupations. Decreased dependence on pastoral income and growing reliance on other sources is not unique to the studied area. This paper contributes to our understanding of transformations which pastoral economies in Tibetan areas of China or elsewhere undergo—either due to their exposure to

the caterpillar fungus market or due to emergence of other income opportunities coming from outside the pastoral economy. This study also adds to knowledge of what happens to pastoral economies in situations of rapid modernization and increased marketization.

This article is based on long-term anthropological research conducted in Machen County of Golok (*mGo log*) Tibetan Autonomous Prefecture (TAP) of Qinghai Province, China, between 2007 and 2010. It uses officially published numbers on the economic status of Domkhok, from both the widely-available online and more "confidential" local government circulated sources, and compares them with the findings of the author's own survey.³ The quantitative data from these sources is supplemented by information from interviews and informal conversations with a wide group of informants ranging from pastoralists to officials of various levels of state administration. Information from the interviews helps evaluate the data from the other two sources (quantitative from official records and from my survey) and sets them in the frame of human reasoning and choices made.

STUDIED AREA

What is today Domkhok Township has been under the jurisdiction of Golok Tibetan Autonomous Prefecture of Qinghai Province since 1955.⁴ It is part of Machen (*rMa chen*) County, and enjoys a favorable location 33 kilometers distant from the town of Tawu (*rTa wo*) or Golok's administration centre. The prefecture lies at the average altitude of 4,100m (Domkhok's average altitude is 3,800m) above sea level and is characterized by a high plateau climate with an average yearly temperature of 0.4°C (0.6°C in Domkhok). This makes mobile animal husbandry the most suitable economy, and yak and sheep breeding has for many centuries been the main source of subsistence income for Golok's population. In Domkhok (where 99 percent of the population is Tibetan), out of 1,812 residents 1,752 persons (or 397 households) are rural-based and engage in the livestock economy.

The township is inhabited by a community identifying itself as Wranakh (*sBra nag*).⁵ The township has been created from territories which, in a traditional sense, belonged to the Metsang tribe or *dewa* (*lde ba*).⁶ In the "old society" (as

3. I am far from both taking the official statistics at face value as well as discrediting them as useless for academic purposes, for reasons similar to those discussed by Fischer (2005: 6ff). The statistics used in this study emerge from the "cooperation" between the data collectors and the pastoralists: supplying inaccurate data is also in their interest. Such is the case when the informants "surmise that their behaviors can be taken into consideration in the (re)distribution of goods which are important for them or can serve as the basis for the institution to *evaluate* them" and are driven by "the desire to obtain certain goods or the desire to show themselves from a good side, and as a consequence—by social values to which the informants relate their position and behavior" (Sulek 1988: 17).

4. Golok TAP was founded as an Autonomous Region in 1954. In 1955 the name was changed to "Prefecture".

5. For more on the Wranakh tribes cf. Sulek 2010.

6. Metsang is customarily referred to as *dewa*. *Tsowa* (*tsho ba*), a similar term also in use in Golok, is usually associated with bigger divisions, such as

the time prior to the effective incorporation of the discussed territories into the People's Republic of China is called), all the lands whose waters end in the Dom and Chieb (Khyeb) rivers (both belong to the Ma/rMa or Yellow River basin) constitute the Metsangs' property. The Metsangs split into three sub-branches, of which two are to be found in Domkhok. The first *richen* (*ri chen*)⁷, with Tanchen (Tang chen/Dwangs chen) as its main part, is mostly inhabited by Metsang Jarkor (*rGya skor*), and the second, in the proper Dom river valley, is where Metsang Sangrkor (Sangs skor) dominate. This article is based on material gathered in the latter.

DOMKHOK AND HER NEIGHBORS

Domkhok Township is often said to be the most prosperous township in Golok – so the local state officials and other informants say. In the common thinking, reflected at the level of stereotypes and gossiping, this economic success of Domkhok is generalized over other non-Golok Tibetan natives of Machen, who are believed by their neighbors to be more affluent and better connected than the rest of the “average” Goloks. This view, leveling all those Tibetan nomadic pastoralists who are not Goloks in this part of the prefecture, can be partly justified when one looks at the whole of Machen County with its peculiarities. With Chongmar (Tib. Khrong dmar *alias* Chamahe)⁸ and the other three townships, Yigzhung (dByug gzhung), Tanzhung (Tang gzhung/Dwangs gzhung) and Tanlag (Tang legs/Dwangs legs), whose land is of low productivity and population (all of Golok stock) covered by the resettlement project at the one end, and Gangri (Gangs ri, Chin. Xueshan) or Domkhok (inhabited by the Wranakhs) with their fertile pasturelands at the other, the county illustrates the different scenarios the pastoral communities can face. Table 1 provides background information about all the eight townships (*xiang*) and two towns (*zhen*) of Machen.⁹

Domkhok's production base can be looked at from two angles: of grassland resources and of livestock ownership and income. Of Domkhok's total area of 11,695 *qi*¹⁰ (circa 780 km²) 91.59 percent is classified as grassland, leaving 8.41 percent for mountain ranges and areas out of human use. Of the grassland, about 674 km² or 86.39 percent of the township's total land area is or can be in actual use. This is a high rate, although not dissimilar to other parts of Machen¹¹, where this

usable grassland ratio is, for example, 79.13 percent in Tawu *xiang*, 90.36 percent in Yigzhung, 81 percent in Tanzhung, 87.16 percent in Tanlag, 80.42 percent in Chongmar, a very high 94.01 percent in Tawu *zhen* and, visibly less, in Tawu Zhuma (rTa wo zhol ma) – 68.58 percent and Gangri – 68.93 percent. Calculating stocking rates in the total area of usable grassland is problematic, since the grassland contracted and *used* does not have to be identical with the grassland deemed *usable*. If the land contracted to the pastoralists was similar to the area of *usable* grassland the stocking rates for Domkhok would be: four animals (one yak, three sheep) per *qi* of land or 60 animals per square kilometer (14 yaks, 46 sheep).¹²

As regards people's livelihood and livestock ownership, an average Domkhok household (taking the data from Table 1 as reliable) would own 110 animals, including 26 yaks and 84 sheep. This is not the highest rate of livestock ownership, and in Gangri the numbers are higher: 138 animals in total, including 42 yaks and 95 sheep. For Tawu *xiang*, the numbers are: 107 animals per household (22 yaks and 84 sheep) and for Tawu Zhuma 93 animals per household (29 yaks and 63 sheep). For the rest of Machen the numbers are: Yigzhung 37 animals (11 yaks, 26 sheep), Tanlag 49 animals (32 yaks, 16 sheep) and Tawu *zhen* 85 animals (61 yaks, 23 sheep). Annual income statistics are not an adequate representation of the pastoralists' incomes, but show disparities between different parts of Machen. Here the leading position goes to Gangri with 5,319 yuan per person – this township was made known as having one of the highest per capita incomes in Golok by Goldstein (1996: 18). The second place goes to Tawu *xiang* (5,305 yuan), and the third to Domkhok (5,091 yuan). Other townships have average rural incomes significantly lower: 3,277 yuan for Tawu Zhuma, 3,341 yuan for Rarja, 2,937 yuan for Tanlag, 2,189 yuan for Yigzhung and 1,290 yuan for Tawu *zhen*. The relative affluence of the Gangri-Domkhok-Tawu trio relates to the medicinal fungus *Ophiocordyceps sinensis*.

OPHIOCORDYCEPS IN DOMKHOK

Based on estimated numbers Domkhok is one of the leading producers of *Ophiocordyceps* in Machen, if not in the whole of Golok. No information about the amount of *Ophiocordyceps* gathered is included in the official statistics,¹³ but Domkhok officials, interviewed in the course of this study, estimate that each year the Township sells between 1,000 to 2,000 *jin*¹⁴ (half to one ton) of the fungus. The average quality, measured by the larger size and heavier weight of the

Wranakh of which Metsang is a part.

7. *Richen* (Chin. *dadui*) and *richung* (*ri chung*, Chin. *xiaodui*) are names used for administration units under the township.

8. Similar to Gangri, Chongmar functions in Golok under its Chinese name Chamahe.

9. The data come from Machen County's statistical yearbook (MSY 2009; 11ff, 44ff, 60) and the County's official website: www.maqin.gov.cn/html/143/5688/html, www.maqin.gov.cn/html/143/5684/html, www.maqin.gov.cn/html/143/5691/html, www.maqin.gov.cn/html/143/5690/html, www.maqin.gov.cn/html/143/5686/html, www.maqin.gov.cn/html/143/2046/html, www.maqin.gov.cn/html/143/5687/html.

10. A Chinese area unit, equals 100 mu or 6.67 hectares.

11. Rarja (Ra rgya), since it is not of purely pastoral, but mixed pastoral-agricultural character, is not listed here.

12. Numbers of horses in Domkhok are insignificant compared to yaks or sheep. Yet, one can read them from the difference between yak and sheep numbers and the total livestock population in Table 1.

13. According to Li et al. Machen produces 6.4 tons of the fungus per year, but only 20 percent of that is gathered (2010: 32). This number seems too low, given the size of the seasonal influx of gatherers into the county. Since the number of gatherers does not decrease there must be resources which can support such a mass of diggers. For more on measuring how much *yartsa* Tibet produces, cf. Winkler 2010.

14. Chinese weight unit which equals 500g.

	Township (<i>xiang</i>)/ town (<i>zhen</i>)	Permanent Residents (Pastoralists)	Households	Land Area (in qj/km ²)	Grassland (in qj/km ²)	Usable Grassland (in qj/km ²)	Livestock	Yaks	Sheep	Annual Income per Person (in yuan)
1	Domkhok <i>xiang</i>	1,723	369	11,695/ 779.67	10,712/ 714.13	10,104/ 673.60	40,958	9,441	31,012	5,091
2.	Gangri <i>xiang</i>	1,804	458	20,264/ 1350	15,292/ 1019.47	15,292/ 942.67	63,246	19,315	43,300	5,319
3.	Tawu <i>xiang</i>	3,989	956	27,206/ 1813.73	22,578/ 1505.20	22,578/ 1,438.33	102,729	21,320	80,054	5,305
4.	Shar Tawu <i>xiang</i>	1,536	378	24,615/ 1641	18,260/ 1217.33	16,882/ 1,125.47	35,120	10,959	23,700	3,277
5.	Rarja <i>zhen</i>	10,197	2,235	39,393/ 2626	38,464/ 2564.27	32,251/ 2,150.07	168,705	85,283	81,388	3,341
6.	Chongmar ¹ <i>xiang</i>	-	-	17,289/ 1152	14,497/ 966.47	13,897/ 926.47	-	-	-	-
7.	Tanlag <i>xiang</i>	3,691	791	26,023/ 1734.87	23,791/ 1586.07	22,682/ 1,512.13	38,867	25,611	12,599	2,937
8.	Tanzhung <i>xiang</i>	-	-	9,885/ 659	8,385/ 559	8,007/ 533.80	-	-	-	-
9.	Yigzhung <i>xiang</i>	2,493	600	22,137/ 1475.80	1,399.27	20,004/ 1,333.60	22,455	6,889	15,270	2,189
10.	Tawu <i>Zhen</i>	915	301	12,047/ 803.13	11,779/ 785.27	11,326/ 755.07	25,727	18,508	6,972	1,290

Table 1: Ground data for eight townships and two towns of Machen County, Golok TAP, 2008.

1. The latest data for Chongmar and Tanzhung come from 2005 and 2007, and due to time difference have not been included (apart from values for the land and grassland area).

fungus (which determine how many specimens one jin or half a kilogram contains) is 1,500 to 2,000 pieces per jin or 3,000 to 4,000 per kg. High quality fungus from the valleys of Drilung ('Bri lung), Wirkung (Bas sgong) and Churu (Chu ros/Chu rul) reaches 1,000 or fewer pieces per jin (2,000 or less per kg).¹⁵ This quality fungus gets the highest prices and in April-May 2010 in Tawu was paid even 70,000 yuan and more per jin or 140,000 yuan per kilogram. In summer 2010, it equaled circa 7000 and 14,000 euro.

The amounts of the fungus gathered by individual households are not easy to study. The pastoralists widely underreport the size of their "harvests," trying to show their land as of not good value, their income insignificant, and their intervention into the grassland environment smaller. It is not uncommon to hear declarations that a household gathered "one thousand pieces" only. Observation conducted in the field shows the opposite: a skilful gatherer can find a hundred or so pieces in one day.¹⁶ According to the township leaders' estimations a single household should be able to gather two and a half or even three kilograms of the fungus in a season. This would mean approximately 200,000 yuan income per household as a whole.

The above numbers give only a partial picture of the economic importance of *Ophiocordyceps* for Domkhok inhabitants. Another, more substantial income is from leasing

the land use rights to persons from outside of Domkhok, who pay high fees to get into the township for gathering. The legal aspects of leasing the land are complicated. As long as the tenants are from within the prefecture and have a rural registered *hukou* (household registration book), their situation is safe. Legal regulations passed in Golok in 2007-2010 forbid, however, leasing the land to gatherers from beyond Golok (EXP 2010: 4, and Winkler 2008c: 1). Control points at the prefecture's roads are supposed to "sieve" the illegal diggers off the Golok residents. In spite of a variety of measures the administration takes, the local population continues leasing their land for caterpillar fungus digging. According to the official estimates, each year Domkhok is visited by around 10,000 diggers, among whom persons from other parts of Qinghai, Gansu and Sichuan dominate.¹⁷

The gathering fees are decided either by individual households or by groups of households (when they use their pastures together or prefer to have one policy to prevent possible conflicts and competition in the future). The fee depends on a locality and the quality of its *yartsa* and on the current price of the fungus. So, the fluctuations in the *yartsa* market prices between 2007 and 2010 were reflected in the ups and downs of fee levels. For example, in Wirkung, known for its rich resources (in 2010 the most successful

15. The lower the number of single fungi in one jin the better the quality. The fungus from Yushu (Yul shul) TAP can give even 700 pieces per half a kilogram. But in Nepal, for example, even the biggest *yartsa* is so small that one never gets less than 2,000 fungi per half a kilogram (Shiva Devkota, pers. comm., November 11, 2010).

16. Winkler recorded 120 fungi gathered by a seventeen year old nomad (personal communication, December 17, 2010).

17. It would mean that during the gathering season the number of migrants outnumber the locals by five to one. If an average family leases the land out to twenty diggers, their number would reach almost 8,000 persons. To this number has to be added "thieves", as the locals say, who sneak into Domkhok without paying fees. Yet another group consists of herders or "helping hands" hired to help with household tasks. It is common that they are paid in *yartsa*: they can go gathering *yartsa* together with all household members.

digger claimed having found 300 pieces in one day¹⁸), the fees were:

However high the fees might seem, when the current market price for fungus is good, there is never a lack of persons

	2007	2008	2009	2010
Gathering fee per person (in yuan)	15,000	5,000	7,000	10,000 ²

Table 2: *Ophiocordyceps* gathering fees 2007-2010, Wirkung valley, Domkhok Township, Machen County, Golok TAP.

2. This is not the highest gathering fee of Domkhok 2010: in Tanchen the fees reached 15,000 yuan, and in Gangri Township they were even higher.

willing to dig. In fact, at the end of one gathering season all the best digging localities are contracted for the coming year. Some degree of flexibility in arranging the payment is possible (the diggers can sometimes pay after the season), but many pastoralists state their unwillingness to compromise: “If they can’t pay, they can’t dig. If they have no cash, there is no way.” This is accompanied by other statements on how much sought after the digging “positions” are and how many people “queue” to pay for what other candidates cannot afford. Similar statements show who in this situation is (or at least feels to be) the side dictating the conditions of the cooperation.

The size of this enormous seasonal flow of people can be seen in the example of Wirkung, whose inhabitants decided *not to let in* more than eighty gatherers per season. In this case, the quality of the land justifies the high fee and allows the land “owners” to earn enough (80 diggers times 10,000 earns 800,000 yuan to share between four households) without risking their own security or too obvious land degradation.¹⁹ In other places, where the residents do not have a common policy, and the grassland is of lower quality, the number of diggers is higher: to Mechen (dMe chen) valley up to three hundred diggers come every year (but the fee in 2010 was only 5,000 to 6,000 yuan). Probably the most extreme case comes from Gangri Township, where the gathering fees reach an astronomic 20,000 yuan per person. In a widely commented on incident from 2008, a family from Gangri leased their pastureland to 360 diggers at one time. This case became public when the prefecture and county officials became alarmed by information they received from a “secret” source and took action to check the actual situation. The consequences of this extravagant contract were sad: the pastureland was confiscated, and two years later the family was still appealing to various institutions trying to get the land back.

18. Such good “harvests” are not common (this number is from the beginning of the gathering season) but suggests what mass of *yartsa* the valley produces.

19. Eighty persons might seem enough to create trouble for a small pastureland and the non-Tibetan diggers are often accused by the pastoralists of not “handling” the digging properly (it is said that they do not close the holes in the ground created by the removing of the fungus). However, as my informants from the county administration reported, eighty diggers is still a number tolerated by the authorities.

LIVESTOCK ECONOMY IN DOMKHOK

Before the *Ophiocordyceps* gathering boom started, Domkhok pastoralists depended on their “traditional” yak and sheep breeding economy. In 2008 (sources quoted in Table 1) the total livestock population was reported to be 41,003 head (9,462 yaks and 31,032 sheep). More recent numbers (given in a document circulated among the township cadres, and read to me by my informant in 2010) were: 7,742 yaks and 28,351 sheep.²⁰ The township officials themselves estimate the average livestock ownership in 2010 as follows:

Households	Yaks	Sheep	Horses	% in the township
Middle-affluent	50	50-100	2	50%
Poor	10-20	0	1	20-25%
Rich	200-280	300	3-6	25-30%

Table 3: Estimated livestock ownership per household, Domkhok Township, Machen County, Golok TAP, 2010.

Just as it was with sizes of the caterpillar fungus “harvests”, numbers of livestock owned are sensitive topics in public conversations. The environmental protection laws, which insist on reducing the pressure from the herds on the pastureland, cause the pastoralists to hide the real size of their herds. The figures from the official sources are based on numbers “allowed” or “acceptable” rather than representing de facto ownership by the nomads. My survey showed that the smallest single herd in Domkhok never went below fifty yaks, the average ownership was between seventy and eighty yaks, and families owning a hundred or more were not infrequent.

SHEEP OWNERSHIP

There is a saying, “There are three kinds of lies: lies, damned lies and statistics,” which Mark Twain made popular. The sheep records from Domkhok should be approached with reservation, which the saying calls for. Both the officially published data and officials’ “private” estimations do not adequately enumerate the sheep population and its current decline. If we round up the number of Domkhok households to 400 and take the sheep head numbers from Table 3 as factual, we would have to agree that over 50,000 sheep (plus about 40,000 yaks) graze on the township’s pasturelands. This number not only exceeds the official data to an improbable degree, but cannot be accepted for another reason: even a casual visit to Domkhok reveals that something is missing from the grassland. The sheep are missing.

The decline of the sheep population was observed not only in Domkhok but also in the rest of Golok and other parts of Qinghai inhabited by Tibetan pastoralists (Ptrackova:

20. These and the following figures come from a series of interviews with the township officials. Each of them was asked to estimate the values (Table 3) of average livestock ownership for middle-affluent, poor and rich households. “Rich” or “poor” indicate “poverty” or “affluence” as measured by livestock ownership. In present-day Golok, rural households’ economic standing does not directly depend on the numbers of livestock owned.

2010). In Domkhok the decline in sheep numbers is variously estimated, depending on the source. An official, who has served on high positions in the township administration structures for thirteen years, estimated that within this period the sheep population dropped 40 percent.²¹ Another official estimated a 60 percent decrease. Furthermore, the township administrators noted that some 30 percent of families do not own any sheep in Domkhok today, while in the late 1990s it was only five percent. In reality, sheep numbers are smaller than the above estimates suggest. The survey I conducted showed that sheep owning families were in a striking minority, and rarely more than two out of ten households could pride themselves on continuing to practice this branch of their economy.

There is one explanation that clarifies the gap between official data and observations from this study. Sheep breeding for sale and household consumption and sheep “keeping” are two separate things. Certainly a large number of households keep *some sheep*, for which *tsethar* (*tse thar*) or the ritual of liberating animals from the prospect of being slaughtered was performed.²² In Domkhok the majority of *tsethar* animals is female. Although, in Tibetan Buddhist theory, performing *tsethar* ritual for male animals makes more sense, since the males are more prone to end their life under the knife of a Muslim butcher, the pastoralists in Domkhok make their own choices.²³ Families that sold their “productive” sheep off can still keep the “unslaughterable” animals. These sheep do not contribute to the household budget, unless they are still of reproductive age (if freed ewes happen to have lambs, these do

not inherit the mother’s status, and are edible). State statistics record total numbers, without differentiating between the status of two sheep. In my survey, however, the focus was on the animals as production means. Hence, from the following diagram, *tsethar* sheep are excluded:

Figure 1: Sheep ownership (excluding *tsethar* animals), Domkhok Township, Machen County, Golok TAP, 2009.

The above figure shows the proportion of the number of families still owning sheep and those who do not have any “productive” sheep anymore. 83 percent of today’s no-sheep households consist of two sub-groups: those who sold their herds off and those who never had any sheep. The latter group comprises of young households established within the last decade. The decline in the importance of sheep can be seen also in the fact that parents or in-laws who still keep their own sheep do not give them to the younger generation, as if sheep breeding was not a profession for the future.

The reasons for sheep sell off by the pastoralists in Domkhok are various. The households that decided to sell all their animals in the last decade indicated several difficulties in sheep raising, which contributed to their decision. These include reasons of environmental and demographic character, namely: (1) lack of labor for sheep herding, (2) insufficient land, (3) declining quality of grass, which, in spite of the family’s theoretically sufficient pastureland, cannot feed yaks and sheep at the same time and, finally, (4) a harsh climate in Golok, making it difficult for the lambs to survive. These four (arranged according to the frequency of answers given) are added to by (5) lack of guns to protect the herds against wolves. These reasons have cumulative effect (they strengthen each other). A forty year old herder, owning 130 yaks (he sold his 220 sheep in 2002) cited winter colds and high altitude (which affect sheep more than yaks), the effort owners must make to herd sheep, and their vulnerability to predation by wolves as reasons which pushed him to quit sheep breeding.

As in Huntington’s explanation for waves of democratization (1993: 50), the reasons for the decline in the sheep population should be bi-modal. To explain why this decline has happened, one needs to look into both: why the sheep are sold off, but also why they are not. It is thus worth investigating the opinion of those who, in spite of the declared obstacles, make the seemingly economically unviable decision of retaining their flocks. Against explanations citing the quality or quantity of grassland or the lack of human resources, arguments of emotional or “cultural” character were put forward. Herders declared their fondness for sheep or their attachment to tradition. They described those who sold off the sheep as “lazy,” saying that this and not anything else explained why people sell their animals off. It is important that the economic standing of the ex-sheep owners is not substantially different to those who continue to raise sheep. If the households that sold their sheep are of similar size and are as able to mobilize labor, and have land of similar extent and sometimes better quality, the motives for sheep selling can be sought outside of the five reasons listed above. These

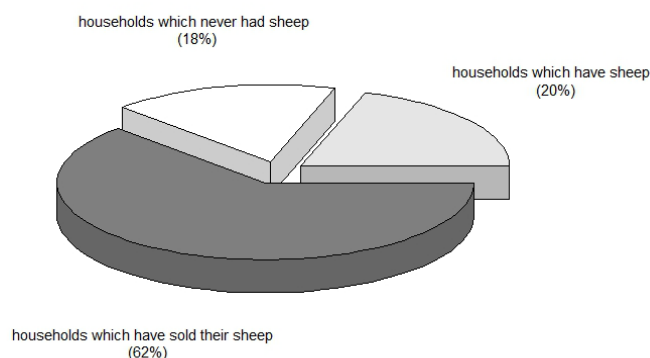


Figure 1: Sheep ownership (excluding *tsethar* animals), Dmokhok Township Machen County, Golok TAP, 2009

21. This and following information from the conversations with the township administration employees of various levels were collected in June 2010. Names of the informants and their positions are not given for generally accepted reasons.

22. *Tsethar* is a Buddhist practice common throughout Tibet. A herd owner can select some of his animals and “grant” them life till natural death. The animal cannot be slaughtered and given/sold to anybody if there is a risk that it will be slaughtered. For more about *tsethar* cf. Holler 2000.

23. The Golok preference for female *tsethar* animals contrasts with the observations from Tibet Autonomous Region gathered in Holler 2000. In my area “theoretical” descriptions given by religious specialists on how the ritual *should be* performed diverged from the herders’ practice, who were blamed by some monk informants for ignorance about how a “proper” *tsethar* should be made.

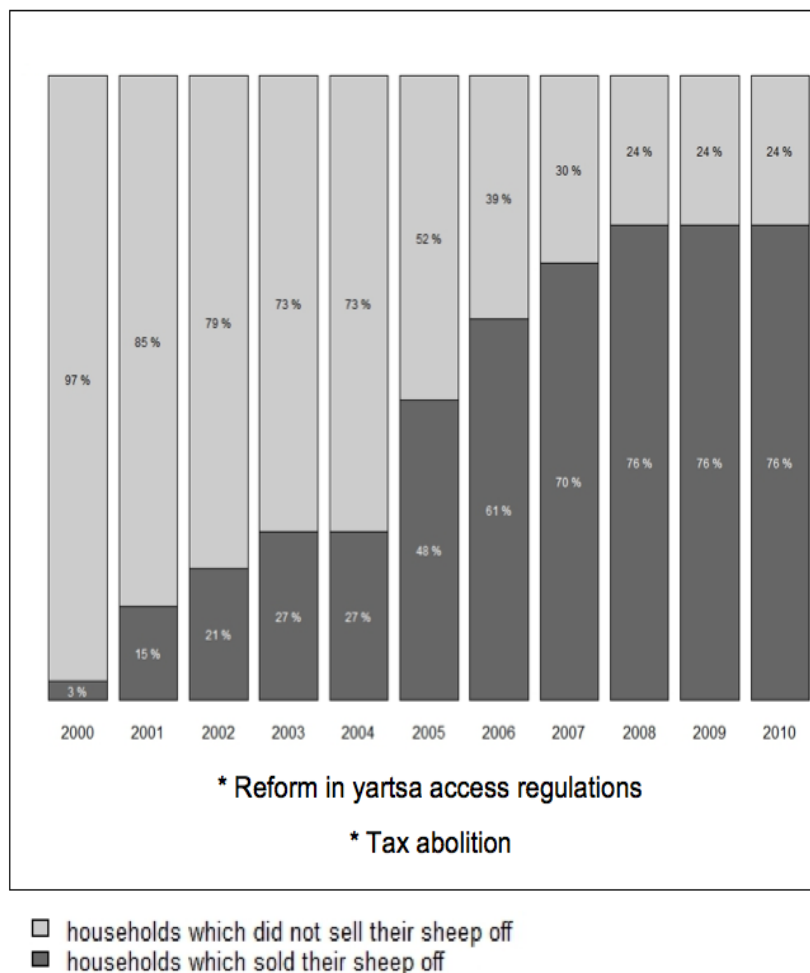


Figure 2: Approximate sheep sales in the area studied 2000-2010, Domkhok Township, Machen County, Golok TAP.

five certainly contribute to the decision making process, but a stronger stimulus must come from somewhere else.

DESTOCKING AND CHINA'S NEW ECOLOGY

The state policy of Turning Pastureland into Grassland (Chin. *Tuimu huancao*) announced in 2003, stipulates that to restore the balance on the grasslands of large parts of West China, restrictions should be put on the scale of use of the pasturelands. In practical terms it means delineating zones temporarily closed to grazing, and others where grazing is banned on a permanent basis. It implies removing herds and people from their previous settlements and moving them to new urban or semi-urban ones. The resettlement policy has been implemented in twenty six of forty five townships in Golok TAP and official sources declare that 2,702 households have been moved to new settlements, and nearly 20,920 km² of grassland have been closed to grazing (GTH 2010). Apart from the resettlement, which is a widely commented upon facet of the new policy (Yeh 2005, Zukosky 2007, Foggin 2008, Du 2009, Xun and Bao 2010), this new environmentalist turn in state thinking postulates limiting the sizes of herds

owned by those nomadic pastoralists who are not covered by the resettlement program, and keeping them in constant check.

Domkhok has not been covered by the resettlement program. For the local population the main contact with the environmentalist policies are the meetings organized in the township, where the pastoralists are lectured on the need to protect the environment. Although township leaders deny the existence of limits on livestock ownership, the pastoralists admit that they are not supposed to keep herds exceeding numbers calculated according to the scheme: one sheep per four mu of land, one yak equaling four sheep or sixteen mu of land. Since the tax abolition no control of the herd sizes was reported by people interviewed. And, since the fiscal duties to the state have been cancelled, none of them knew what consequences would occur should the township administration bring a case against persons caught stocking their grazing grounds above the limit: "We are told we must not keep more yaks than we can, but I've not heard of any fine for that."

In none of the dozens of interviews with the Domkhok pastoralists was environmental protection mentioned in the context of sheep selling, and nobody signaled that he or she was told or forced to sell his or her sheep or that the policy influenced this decision in any significant way. When asked whether it is the state planners' wish that Tibetan pastoralists sell their sheep off, the informants strongly

asserted their autonomy in their decision making process. It can, of course, be argued that the lectures and discourse on environmental protection penetrate local society and create an atmosphere favoring sheep selling over sheep keeping. Yet it seems improbable that the Domkhok pastoralists' massive sheep selling was or is a direct result of steps taken by the local authorities.

DO SHEEP EARN MONEY?

A chronology of economy-related events in Golok helps to clarify the background of the studied phenomenon. The first noted cases of clearing the grasslands of whole flocks of sheep in Domkhok dates from the year 2000. This timing was mentioned by local leaders and environmental activists. It is possible that some families reduced their sheep numbers in other Tibetan areas earlier, but only after 2000 did sheep selling in Domkhok become common. Figure 2 shows how the number of households which sold their flocks of sheep grew between 2000 and 2010 in the area studied. The data gathered come from altogether fifty households.

Figure 2 shows change in proportions between households

which sold off their sheep and those which resisted this trend. It leaves out those families which never owned any sheep. The exponential curve of increase in the number of households which decided to quit sheep rearing shows a spectacular “jump” after 2004. Two dates can be helpful to contextualize this rapid change. In 2002, as the nomads recollect, the first caterpillar fungus gatherers arrived in Domkhok and paid the gathering fees directly to the nomads on whose land they wanted to stay. In 2004, the agricultural tax reform reached Domkhok. These two points, the reform in the *yartsa* gathering regulations and tax abolition, as the pastoralists say, have changed their fortunes. Domkhok’s economy is reported to have been steadily improving since the late 1980s, but in the 2000s the nomads’ income rose to heights unknown before, and *yartsa* gathering and fees became the central pillar of the households’ material well-being.

Seen in the context of this improvement in the pastoralist economy the growth in the sheep selling-off trend is not surprising. It is partly confirmed by the records of the largest slaughter house in Xining. Its manager confirmed that the absolute peak in the numbers of sheep they bought from all over Qinghai was in 2006 when, according to his estimations, over three million sheep were sold for meat. Two Tibetan prefectures, Golok and Yushu, were their important suppliers. The same informant said that after 2006 the numbers of sheep sold went down and the market stabilized. My survey gives a similar impression: within the group of households studied none declared having sold off their sheep after 2007.

Two questions from my survey are critical for understanding the fate of sheep in Domkhok: (1) “Would you ever sell your sheep if you didn’t have income from *yartsa gunbu*?” and (2) “Did you see any change in enthusiasm for the livestock breeding after the *yartsa gunbu* trade started?” Almost all persons answered “No” to the first, and “Yes” to the second question. While the answer given to the first one was usually followed with the herder’s rhetorical question, “What would I live from?”, the answers to the second one were more descriptive:

People have now good income such as they would never get from keeping animals. And prices for animal products are very low, which doesn’t help to increase people’s interest in keeping animals properly. Wool or sheep skins, or yak cashmere and hides, and even milk and meat can’t make you good money.

What then are the prices of sheep products at the market in Golok? In 2010, sheep wool earned around seven yuan per kilogram. A household owning a flock of 200 sheep can sell around 200 kg of wool in one year (an average Golok

sheep gives one jin and several shang of wool²⁴). Shearing that number of sheep takes up to six hours of the collective work of ten people. The mathematics is simple: a day of work for six persons plus transporting the wool to town gives an income (in 2010 prices) of only 1400 yuan.²⁵ Sheep skins are a ready by-product of sheep slaughter. The price is better: 20 to 60 yuan depending on the animal’s age and size (20 yuan for 2-3 year old, 30-50 yuan for adult females, and 60 yuan for the biggest males). Finally, sheep are sold for meat: an average animal weighing in at 15 kg fetched 350 yuan at the market. Neither Golok nor Wranakh nomads milk ewes, so milk is not a source of income. To decide whether or not this price is worth the effort of sheep breeding is up to an individual’s assessment, but compared to the large sums paid for animal products in the past—some of them episodic and lasting a year or two, but well remembered by informants (such as 280 yuan for sheep skins in 1995-1996)—recent prices seem less attractive and are often complained about.

Whether or not sheep production can substantially contribute to the household budget is shown in the example of two neighboring families: one holding on to their flock of sheep and another who had sold their flock. The first, Mr Dorji’s household (Table 4), had six members, owned “around a hundred” yaks, 200 sheep and four horses (all this information recorded in 2010). The second, Mr Tserdor’s household (Table 5) had seven members and owned 90 yaks and six horses. Their sheep, totaling 170, were sold in 2006 due to, as Tserdor declared, big losses to wolves and a lack of people who had time to “look after them all day long.” Both households applied different strategies to generate income. Tserdor declared that his family did not sell any yaks in 2009 but instead increased sales of cheese and butter. Dorji’s household relied on a more diversified array of income streams, leaving out only sales of the rough outer yak hair *rtsipa* (*rtsid pa*) and the soft undercoat *kulu* (*khu lu*): yak undercoat or yak cashmere price fell to 10 yuan per kg, which, as the family judged, made its production unprofitable (they recalled 24-26 yuan/kg paid in the late 1990s). Both households shared their summer pastures, and their land produced similar amounts of *Ophiocordyceps*. Thus differences in the *yartsa* income, in the land quality or its size as a factor differentiating the families could be passed over. What makes it all the more like a “controlled comparison” is that both households had a similar structure and none of them could claim having more human resources than the other.

24. *Shang* (*srang*) is a Tibetan weight unit equaling Chinese *liao* or around 37.5 g.

25. Wool from Golok is of lower quality than that from Qilian mountains and other pastoral regions specializing in sheep production. Although a high employee of Qinghai Plateau Tibetan Sheep Carpet Co. Ltd assured me that their carpets are woven of Tibetan wool, local wool is pushed out of the market by imports from Australia and New Zealand. It is also not a secret that mutton served in Tibet is often imported from overseas, and finding a local sheep skin sufficient for a *gonkha* (gong kha) collar in a robe is next to impossible.

	Estimated quantity sold in one year (2009) ³	Value per piece/kg	Total contribution to the yearly budget
Yaks	10	2,000 yuan/yak	20,000
Yak hides	4	100 yuan/hide	400
Yak hair and cashmere	-	-	-
Butter	50 kg	40 yuan/kg	2,000
Cheese	50 kg	26 yuan/kg	1,300
Sheep	50	350/sheep	17,500
Sheep skins	10	30 yuan/skins	300
Wool	200 kg	7 yuan/kg	1,400
Yartsa gathering	1,000 pieces	-	Not sold yet
Yartsa gathering fees	20 diggers, 10,000 yuan each		200,000
Total			242,900

Table 4: Estimated income in Dorji's household (owning sheep), Domkhok Township, Machen County, Golok TAP, 2010.

3. The following numbers come from the pastoralists' own estimations. The focus is on stable points in the budget, and all "occasional" earnings from selling a car, motorbike etc. are excluded from the tables.

	Estimated quantity sold in one year (2009)	Value per piece/kg	Total contribution to the yearly budget
Yaks	-	-	-
Yak hides	4	90 yuan/hide	360
Yak hair and cashmere	35 kg	10 yuan/kg	350
Butter	100 kg	40 yuan/kg	4,000
Cheese	100 kg	26 yuan/kg	2,600
Sheep	-	-	-
Sheep skins	-	-	-
Wool	-	-	-
Yartsa gathering	1.30 kg	54,000 yuan/kg	70,200
Yartsa gathering fees	20 diggers, 10,000 yuan each		200,000
Total			277,510

Table 5: Estimated income in Tserdor's household (owning no sheep), Domkhok Township, Machen County Golok TAP, 2010.

Sheep breeding is perceived as inconvenient by many for the same reason it is burdensome to Dorji's household. The family's senior members, over seventy years old, have retired to the village, where the family bought a house in 2002. Their teenage son lives with his grandparents in the village, and studies in a township school, while the elder daughter attends a boarding school in Tawu. Thus, out of six persons only two live permanently in the mountains. This results in a shortage of labor, which the family solved by employing a year-round resident shepherd from Huzhu (paid 10,000 yuan a year plus food and clothing). Furthermore, the 2,070 mu of land the family can use do not suffice, as they say, for the herds they own. This problem they solved by leasing a plot of land for winter grazing (5,000 yuan a year).

Dorji's household is thus in a situation not so dissimilar from other Domkhok families, which echoed the sentiments of the informants from the Churu valley:

We sold our [280] sheep last year [2009]. Our four grandchildren are at school, we [the interviewee and his wife] live in town. My son-in-law looks after the yaks, and there is nobody who could do the same for the sheep. It's only two people there in the mountains. For a small family like us it's not possible to keep sheep anymore.

However, in Churu more than half of the households hire "helping hands" (usually from Tibetan farming communities in Qinghai), who stay with them and take over the herding. The quoted family is not an exception. Dorji could also agree with some complaints expressed by yet another informant:

We don't have enough land. There is less and less grass every year, and so many *abras* (*a bra*)!²⁶ The sheep don't have enough to eat, so we sold them off. Anyway, almost everybody did.

However, around 20 percent (as the township leader estimated) of the Domkhok pastureland is leased between the households. So if the family wanted to keep their sheep they could probably manage to find a solution not only for the lack of working hands, but also for the shortage of grassland. In spite of observable problems and the need for extra investment to solve them, Dorji's family not only did not sell the sheep, but, instead, enlarged their flocks. In 2009 they bought an additional forty sheep (800 yuan each), which totals another 32,000 yuan of investment.

Can the power of sentiment balance the difficulties in sheep breeding? With extra investment, probably yes. This cannot, however, mask the relatively small contribution the

26. *Abra* or Plateau Pika (Lat. *Ochotona curzoniae* and other *Ochotona*) is a small burrowing animal widespread in Golok. It is considered a pest and targeted by poisoning and other actions aimed at reducing its population.

sheep products make to the household's finances. As shown in Table 4 and 5, sheep production takes place somewhere in the lower registers of profitability. While *yartsa*-related income reaches 82 percent in the sheep owning household (97 percent in the other one), sheep production contributes slightly more than seven percent. The income from *yartsa* wins in this competition also by how quickly one can earn it: it is quick money, earned in two months. It also requires little effort: its major part comes not from the fungus which the family members gathered themselves, but from their actions as managers of the gathering process, i.e. from contracting the land to gatherers.

Availability of so much cash income is blamed in the local discourse in Golok for changing pastoralists' approach to other jobs, where yields are not commensurate with effort. Here is one of the fundaments of the critique of the social side effects of the *Ophiocordyceps* business. One encounters this critique when trying to theorize the meaning of *yartsa* gathering for the life of pastoralists in Golok. Instead of praises complaints are made, as this by a yoghurt factory owner:

Of course it doesn't make any sense to produce milk for us, of course. We pay only 3.5 yuan per jin of milk and we expect regular deliveries. Who would like to work like that?

Indeed, a number of informants admitted that they throw away sheep skins and even yak hides as not worth carrying to market. Apart from such extremes, the availability of the new income encourages pastoralists to reduce their reliance on livestock production (a growing number of households do not sell *any* butter and cheese or *any* yaks). Compared with the ease of earning *yartsa* income, sheep breeding becomes economically "irrational." Costs include not only the shepherd's salary and land rent, but also labor in herding or during the lambing period.

MARKETS

Domkhok lies a short drive from the town of Tawu. The township's simple roads connect the pastoralists' winter quarters with the town and the township seat "village". There is no public nor commercial transportation services available, and only with their private vehicles can the pastoralists reach Tawu. In 2007-2010 cars and motorcycles were in general use. Increased contact with town whose meat stalls invite buyers all day long can discourage the pastoralists from breeding their own sheep.

Prior to 2000, according to informants' recollections, when they did not have their own transportation, they rarely went shopping, and the amount of non-homemade food products they consumed was lower than today. Home ground *tsampa* (*rtsam pa*), meat from home-slaughter and milk products were the basics the families relied upon. Today, informants are reducing consumption of their own animals

in favor of rice, vegetables, noodles and flour-made dishes. They admit they slaughter half the number of yaks (for home consumption) they did a decade ago. With cars or motorcycles (every household in the survey owned at least a motorcycle), the Domkhok pastoralists can go to town more easily, and usually once a week they fetch a new supply of vegetables, fruit and meat. In the most exceptional cases, informants declared that they go to town every second or every day.

Markets with their butcher shops are thus now easier to access. The pastoralists also have disposable cash from the caterpillar fungus business enabling them to regularly shop at the market. They can buy their beloved mutton instead of breeding and slaughtering their own sheep. The two trends (buying mutton and selling off sheep) strengthen each other: the fewer sheep people own, the more mutton they need to purchase from the market, and the more people buy the less sense they see in keeping their own sheep. With the widely available market supplies of mutton, one more argument for keeping sheep is countered.

YAKS

The declining sheep population should also be analyzed in relation to numbers of yaks. Township officials ascertained that not only the sheep but also the yak population is declining, although at a lower rate. However, my survey did not confirm this claim. Its results show that Domkhok pastoralists keep more yaks than the official sheep-to-grassland ratio allows. A reliable local source said that as much as 40 percent of all yaks in the township are those beyond the prescribed limit. This could be checked, for example, with local veterinarians, who dispense livestock vaccination shots: while "within-the-limit" animals receive them at public cost, those for the shadow-sphere-yaks must be paid by the herders.

A preference to have large herds of yaks has been discussed by many authors. It was analyzed as a method of keeping savings, an insurance against sudden livestock losses or a compensation for the animals' low productivity and late reproductive maturity (Farooquee 1998, Levine 1999, Yan et al. 2002). It has been argued that killing "too many" animals is against the Tibetans' respect for life, and hence something the pastoralists try to avoid. On the other hand, a sea of ink has been used to prove that herds that are too large are responsible for grassland degradation. A large part of the official discourse about desertification and resettlement is based on asserting that overgrazing made areas like Martod (rMa stod) County in Golok a bleak and devastated land although as recently as the 1980s it was still said to be a lush paradise for both pastoralists and their yaks.

The state-launched environmental protection programs call for destocking the grassland. Yaks however do not seem to be their victims. Pastoralists interviewed explained that, practically speaking, yaks are easier to hide if government officials come to the highlands to count the animals. The statistics show that yak herds are shrinking, but a contradictory signal comes from the market. Both the observation of the

market and the survey show that the herders sell fewer animals and many of them do not sell any. Since yak selling patterns require long term research no conclusive statements can be issued here. It is certain though that within the years covered by my study it became popular in Domkhok to sell few or no yaks at all.²⁷

The avoidance of selling livestock and increased reliance on other sources of income has been also noted from Golok by Costello (2008: 74), and from Yushu TAP by Gruschke (2008: 18). It is also reported from Bhutan where people in areas drawing their income from fungus gathering stop selling their yaks.²⁸ Some scholars see this decrease in livestock sales as a sign of the ability to adapt one's livelihood strategies to changes in the market (Fischer 2008: 36). However, this is problematic for officials I interviewed, as it contradicts the official data. Asked directly how yak numbers can drop when the herders sell less, they claimed that the animals' mortality and people's consumption still keep the herds in check. But the Domkhok pastoralists, as I have noted, eat fewer animals from their own herds and instead choose to rely more on purchases from the butcher.²⁹

An explanation of why people sell their sheep should also examine why they are so reluctant to sell yaks. The reasons given by informants range from prices that are too low to Buddhist precepts that invoke compassion and suggest refraining from selling yaks for slaughter. Among the pastoralists interviewed the Buddhist explanation was more common. One could ask why the sheep do not receive the same compassion.

The preference for large herds of yaks needs reinvestigation in places like Domkhok, which no longer belong to the sphere of the subsistence economy. Large herds of yaks are not as crucial for the pastoralists' survival as they used to be. Yaks are not necessary to moving camps, since pastoralists now have cars. And who spins yak hair into tent cloth when black tents are now a rarity? Theoretically speaking, sheep, in the herders' own words, have some advantages which yaks lack. They grow faster and are more easily converted into cash. But now cash comes mainly from caterpillar fungus. Yet, it is not only economic reasoning which can make one



The end of the journey: slaughterhouse in Xining. Photo: Emilia Sulek

sell sheep but not yaks. This difference in the fate of these two animal species touches upon a bigger issue of different ethos or values connected to these two (yak and sheep) branches of the pastoral economy and different functions these two have (or used to have).

Is it that by selling sheep the pastoralists can "win" something in debates about yak numbers? This correlation between lower sheep and growing yak numbers needs further investigation, but it can be posited that the yak population grows at the expense of sheep. In case of stronger pressure from environmental policies, the pastoralists can argue that by selling off their sheep they have contributed to pastureland conservation. An official from Domkhok admitted that in a situation of choice the pastoralists would sacrifice their sheep first. In this context, the decision to sell off sheep can have a strategic value: of safeguarding the right to keep yaks.

DISAPPEARED SHEEP: CONSEQUENCES AND COMMENTS

In their 1986 book *Poverty of Plenty* Bai and Wang tried to explain the striking differences between the economically advanced Eastern parts of China and her rural, Western regions. Over two decades have passed since the book appeared, and the authors might wish to adjust their opinions today. Certainly they are not the only ones to think that in pastoral regions of Tibet there are some intrinsic determinants of economic underdevelopment which do not let their residents move up the ladder of progress. The authors' diagnosis, unfavorable to the pastoralists, reads: "In comparison with developed regions the rural inhabitants of backward regions are clearly characterized by a general lack of entrepreneurial spirit and an excessive adherence to old ways". Furthermore, their "interpersonal relations (...) are clearly characterized by a weak commodity sense in economic relations and a strong

27. I asked informants who had not sold their yaks whether or not they worried about the future condition of their pasturelands. The answers suggested what was already described by Breivik (2007: 59ff): that the pastoralists connect the lower productivity of the land to the plague of insects and rodents, human interference in the landscape (mining), and fencing the land rather than to the stocking numbers.

28. Dorji Dhradhul, pers. comm., Xining, June 6, 2010, Tshitila, pers. comm., December 12, 2010.

29. Also in Yushu pastoralists slaughter fewer of their own animals, but buy them from others and have them slaughtered (Andreas Gruschke, pers. comm., February 7, 2011).

traditionalism in social relations.” All this, the authors argued, is reinforced by low educational standards, low exposure to mass media and weak information flow, lack of proper transport and scarcity of market towns which do not help the pastoralists develop “more rationality” in their economic thinking (1991: 38, 48, 55ff). If this rationality depended on exposure to television (TV sets have successfully made their way into the pastoralists’ houses) and was a function of better connection to markets, the Domkhok pastoralists must have by now gained, in Bai and Wang’s theory, the ability to “think economically.”

None of the individuals quoted in this paper, neither those who sold their sheep off nor those who say they are determined to keep them, openly referred to economic arguments. This ostensible lack of economic arguments could be misleading, when the decision itself appears to be of an economic nature. Some could argue that it is the snowball effect which drives dozens of households to sell their sheep after the “first one” did so several years ago. Others propose that it is a forced move and that the pastoralists are involuntarily following the dictates of the state’s new policy. But is there indeed no “economy” in the herders’ reasoning?

There are numerous arguments against sheep, but not many in favor of continuing sheep breeding. In the pastoralists’ own words, decreased labor availability and insufficient grassland resources are the main reasons for their abandoning sheep production. Production for the market appears senseless due to low returns (in comparison with other alternatives) and high opportunity costs. Keeping their flocks for subsistence production is not a necessity anymore. Better access to town and the pastoralists’ closer integration with the commodity market make mutton purchases possible at almost any time when meat is needed. Not by coincidence did the sheep business lose its attractiveness during the increase of profits generated from the caterpillar fungus economy, which injected large amounts of cash into the pastoralists’ budgets. The emergence of this new source of income has strongly affected rural livelihoods and tipped the scales in favor of the cash economy at the expense of the traditional, essentially subsistence-oriented economy. The sheep had to pay the price.

The phenomenon of “disappearing sheep” is reported from Golok and other Tibetan pastoral areas of China—those where caterpillar fungus trade is an important part of the local economy.³⁰ It varies in dynamics and scale, and also in the set of reasons precipitating the herders’ decisions. They result from the interplay of a range of factors, whose significance

depends on a specific local situation. Thus it is important to be cautious in extrapolating findings from one area to others. For example, the new environmental policies create frames within which selling off the sheep may appear to be the right move, but the degree to which they impact the pastoralists’ decision making process can vary. In Domkhok Township, which enjoys a rather positive environmental situation, the environmental policies can support the pastoralists in their choices, but do not determine what they finally do. At the same time, in areas which are affected by land degradation and ecological resettlement, the situation can be different, and pressure for environmental protection is more strongly felt in decision making.³¹

None of the reasons discussed in this article is sufficient and none of them necessary for the trend to sell off the sheep. None but one: without the emergence of the lucrative income from the caterpillar fungus, the sheep selling trend, with its scale as noted from the area studied, would be difficult to imagine. The impact of the caterpillar fungus boom is important also because many other phenomena in the local society are closely connected to it—the pastoralists’ increased integration with and dependence on the town markets is a consequence of improved transportation and availability of cash income, and this again relates to *Ophiocordyceps*. The availability of the *yartsa* income is the only factor, among those discussed, which suffices to cause a response like this (in *this* situation, other things being equal). It could suffice hypothetically, because neither the decline in sheep numbers nor the caterpillar fungus gathering business can be analyzed separately from the bigger picture of the realities of social life and economy in Domkhok. Complementary reasons, like changes in the family size and grassland productivity, are also important.

The case of Domkhok demonstrates something else as well. A small number of families that did not follow the sell-the-sheep-off trend and continue to maintain their animals, would be labeled in the terminology of social science as “deviant cases” (Kendall & Wolf 1955). They show how and at what cost the sheep economy can be maintained. Interestingly, these families explained their faith in sheep breeding in terms of their emotional attachment or its cultural importance for Golok society. With some effort, some Domkhok families are able to keep their sheep—but only if they are willing to organize an additional workforce and invest their savings in it. In other words, they are willing to subsidize an economy which is not extremely profitable, but perceived as having a value beyond its immediate material aspect. Thus if the emergence of the caterpillar fungus cash economy gave the pastoralists the power to make choices and give up what they

30. Decline in sheep numbers has been observed throughout the Three River Source National Nature Reserve (Ptackova: 2010). This could suggest that it is the ecology-oriented state policies which stand behind the sheep “disappearance.” Yet, sheep breeding has also declined in Bhutan, wherever caterpillar fungus contributes to the local economy (Tshitila, pers. comm., December 12, 2010). But no decline in sheep numbers has been observed in Western Tibet (in TAR) where pastoralists do not depend on the caterpillar fungus trade for their income (Melvyn Goldstein, pers. comm., November 17, 2010).

31. What is so far reported is that the pastoralists sell their sheep off *expecting* some move from the local authorities but not as a reaction to it. Knowing of the plans to enforce new stocking quotas, some nomads started selling off their livestock early, before prices declined when everybody would have to sell (observation from Tanlag, 2009, Jarmila Ptackova, pers. comm., November 20, 2010).

saw as, for example, overly hard work, it also gave them a chance to continue it by providing the capital necessary to overcome the difficulties in sheep breeding which today's pastoralists face.

Sheep do not prove to be a powerful cultural constraint in Golok, and since Golok and Wranakh nomads are yak rather than sheep herders, losing sheep from their cultural landscape does not have to cause much harm to the pastoralists' identity: yaks are more makers of the status quo. With the grassland itself the story may unfold differently. Cutting the number of sheep makes the pastureland look less crowded—this is what the policy planners desire. Yet, it is debatable if removing the sheep from the grasslands really could bring about the improved health of the environment. Indigenous environmental organizations in Golok stress that only sheep and yaks together guarantee the optimal use of the grassland and are alarmed that taking the sheep out of the yak-sheep-horse trinity, which has been the essence of past grazing regimes in the highlands, can cause more serious trouble under the flag of saving the environment than the sheep would really do.

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